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ABSTRACT

Information has long been an essential in conducting human affairs, but it is surprising that informatics (information science) has not been established as a field of study within education. This paper attempts to formalize educational informatics through a needs assessment approach and to outline a research agenda. The four needs considered are justification, definition, differentiation, and organization. These areas must be defined and developed to sustain informatics as a field within education. With regard to research, eight areas are identified as starting points for detail and expansion: (1) access/equity; (2) learning; (3) dissemination; (4) processing; (5) professional development; (6) services/networks; (7) users/seekers; and (8) retrieval. These areas do not encompass all research opportunities, but they are offered as starting points. (Contains 15 references.) (Author/SLD)

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Informatics as a field of study in education: A needs assessment and research agenda

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Abstract

Information has long been a sine qua non in the affairs of humankind. Therefore, many will be surprised to learn that we have not established informatics (information science) as a field of study within education. Indeed, other human services (e.g., medicine, nursing) have found it beneficial (if not necessary) to develop information science specialties within their content areas. Herein, I seek to formalize educational informatics through a needs assessment and research agenda. Accordingly, four needs are considered: (a) justification— currently our disjointed efforts at informatics are not a substitute for a dedicated field of study, (b) definition—initially a broad conceptualization of informatics is needed, (c) differentiation—our existing information problems should serve to specify sub-fields, and (d) organization—dedicated databases, publication outlets, and academic programs are required to sustain and evolve the field. With regard to research, I have identified eight broad areas: (a) access/equity, (b) learning, (c) dissemination, (d) processing, (e) professional development, (f) services/networks, (g) users/seekers, and (h) retrieval. It should be noted that these are not inclusive of all research opportunities and are offered merely as a starting point for further detail and expansion. It is hoped that I have generated interest (and debate) within the educational community regarding the development of educational informatics.

Informatics as a field of study in education: A needs assessment and research agenda

To date, information has been a sine qua non in the affairs of humankind. This status is unlikely to change anytime soon given information's increased valuation, production, and accessibility. Accordingly, to better understand its effects, the field of informatics (information science) has evolved which is defined here as "the collection, classification, storage, retrieval, and dissemination of recorded knowledge treated both as a pure and as an applied science" (Merriam-Webster's Collegiate Dictionary, 1997, p. 599).

Although information science has contributed immensely to theoretical and practical discourse, many disciplines have found it useful (albeit necessary) to establish their own informatics field to solve discipline specific problems. One successful example is medical informatics, which today boasts its own association (American Medical Informatics Association), a dedicated journal, and funded graduate study programs.

Herein, my objectives are twofold: (a) to emphasize consolidation of our current informatics efforts into a field of study and (b) to suggest preliminary areas of research for this field.

Discussion

Needs Assessment

In the following sections, I propose four requirements needed to establish educational informatics: justification, definition, differentiation, and organization.

Justification. Many readers will be surprised at my assertion that "we have not established informatics as a field of study within education." Indeed, one could make several counterpoints. First, if one searches the Educational Resources Information Center (ERIC) database using the term "information science", 5706 records are returned. Second, many researchers have

addressed information issues specific to education (see e.g., Coyle, 2000; Hertzberg & Rudner, 1999). Finally, several academic programs have been created to provide information related specialists for education (e.g., educational technology). In turn, I counter that just because we have (a) indexed articles from information science journals, (b) researched some issues (but not nearly all), and (c) trained information related specialists, does not constitute a field of study in informatics. A fair statement from both viewpoints would be to say that we currently have a strong informatics practice rather than a formalized field of inquiry.

Definition. Having justified the need for educational informatics, a logical following is to define the scope of the field. Given the current ambiguous nature of educational informatics, I am in favor of a broad definition (it is too early to restrict endeavors). Accordingly, I propose the following definition:

> The collection, classification, storage, retrieval, and dissemination of recorded knowledge treated both as a pure and as an applied science (Merriam-Webster's Collegiate Dictionary, 1997, p. 599).

Differentiation. The broad definition provided above (while conceptually useful) does little to distinguish sub-fields for potential practitioners. Differentiation is needed and I assert should be guided by the information issues that we are experiencing in education. At first blush, information overload seems to be a substantial problem confronting all constituents (students, teachers, administrators, researchers).

Organization. Assuming that differentiation is underway (i.e., we are already exploring information issues) the next and most significant need is that of organization. By organization, I am referring to structures and activities which will ground and nurture educational informatics. Some examples are (a) creation of an informatics list server, (b) establish a special interest group

(perhaps through American Educational Research Association), and (c) establish an ERIC Clearinghouse for informatics. As the field matures, peer-reviewed publication outlets and funded graduate study programs are viewed as essential. Particularly, the later would be important for producing a community of dedicated scholars capable of furthering the field.

Research Agenda

As a way of galvanizing the needs described above, I have defined the following research agenda through a literature search of the ERIC database (see Appendix A for the search term matrix). The objective was to pinpoint information-based research needs pertaining to educational informatics as described herein. These are (a) access/equity (Molholt, 1989), (b) learning (Clements, 1999), (c) dissemination (Rezai-Rashti, 1997), (d) processing (Hess 1999; Williams & Brown, 1991), (e) professional development (Molenda, 1996; Todd, 1995), (f) services/networks (Newman, 1990; Thomas, 1993), (g) users/seekers (Hurd *et al.* 1992; Reneker, 1993), (h) retrieval (Janes, 1991). It should be noted that these are not inclusive of all research opportunities and are merely offered as a starting point for further detail and expansion. The search term matrix (Appendix A) is included for those interested in furthering this agenda.

Conclusion

In sum, we should strongly consider devoting our resources to the establishment of educational informatics. At a minimum, it is hoped that I have stimulated discussion among others to reassess how we are currently conceptualizing information within and educational context. Maximally, it is hoped that others will build upon the work I have initiated herein.

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Appendix

Search Term Matrix: ERIC Database

Search Term Matrix			
Information	Research		
	Needs	Problems	Opportunities
Age	14	0	0
And Referral Services	7	1	1
Books	4	0	0
Brokers	2	0	0
Centers	44	16	2
Dissemination	238	79	18
Flow	10	1	1
Industry	4	1	0
Infrastructure	10	2	1
Literacy	14	2	0
Management	25	5	1
Needs	293	51	4
Networks	81	10	8
Overload	3	1	0
Policy	29	5	0
Processes	149	39	3
Professionals	17	7	6
Providers	38	12	6
Resource Management	4	0	1
Retrieval	153	28	6
Science	210	24	8
Science Education	13	3	0
Science Research	50	6	2
Scientists	17	3	0
Seeking	91	18	3
Services	115	21	4
Skills	10	4	0
Society	11	1	0
Sources	114	42	21
Specialists	2	1	0
Storage	18	13	1
Superhighway	1	0	0
Systems	152	47	7
Technology	115	9	6
Theory	38	7	8
Transfer	12	5	2
User Needs	1	0	0
User Satisfaction	14	3	0
Users	28	7	0
Utilization	92	62	0
Value	8	2	0

Note. Total records retrieved = 2909